

What is claimed is:

1. An information processing apparatus for determining a key region from a structured document including a plurality of regions, the apparatus comprising:

a read section acquiring contents or management information of the regions included in said structured document at time series for a plurality of number of times;

a storage section storing the contents or management information of the regions acquired by the read section;

a comparison and check section comparing the contents or management information of the corresponding regions among the contents or management information of the regions acquired by the read section, and checking whether each of the regions has been updated based on a comparison result;

an update frequency calculation section calculating update frequency information for each of the regions based on a history of a check result of the comparison and check section; and

a key region determination section determining the key region from the plurality of regions included in said structure document based on the update frequency information.

2. The information processing apparatus according to claim 1, comprising a boundary division section dividing the respective regions included in said structured document based on boundary information on boundaries among the regions displayed on a screen, wherein

said read section reads the contents or management information of said respective regions by cooperating with the boundary division section.

3. The information processing apparatus according to claim 1, comprising a region management section discriminating the respective regions using an inter-region structure if the inter-region structure

showing a logic structure between the regions is defined for each of the regions included in said structured document, wherein

said read section reads the contents or management information of said respective regions by cooperating with the region management section.

4. The information processing apparatus according to claim 1, wherein

said comparison and check section compares the content of one of the regions acquired by said read section at one reading time with the content of said one region acquired at a different reading time, and thereby checks whether said one region has been updated.

5. The information processing apparatus according to claim 1, wherein

said comparison and check section compares the management information of one of the regions acquired by said read section at one reading time with the management information of said one region acquired at a different reading time, and thereby checks whether said one region has been updated.

6. The information processing apparatus according to claim 1, comprising a conversion section converting said contents or management information of the regions into converted data, and outputting said converted data to said storage section.

7. The information processing apparatus according to claim 1, wherein

said update frequency calculation section calculates new update frequency information based on previous update frequency information and the check result newly output from said comparison and check section.

8. An information processing method for determining a key region from a structured document including a plurality of regions, wherein

a read section acquires contents or management information of the regions included in said structured document at time series for a plurality of number of times;

a storage section stores the contents or management information of the regions acquired by the read section;

a comparison and check section compares the contents or management information of the corresponding regions among the contents or management information of the regions acquired by the read section, and checks whether each of the regions has been updated based on a comparison result;

an update frequency calculation section calculates update frequency information for each of the regions based on a history of a check result of the comparison and check section; and

a key region determination section determines the key region from the plurality of regions included in said structure document based on the update frequency information.

9. An information processing apparatus for determining a key region from a structured document, the apparatus comprising:

a read section acquiring said structured document regularly or irregularly;

a division section dividing the structured document acquired by the read section into one or a plurality of regions;

a division result storage section temporarily storing a division result of the division section;

a comparison section comparing a content of said structured document acquired by said read section at one reading time with the content of said structured document acquired at a different reading time for each of said regions, and thereby checking whether each of the regions has been updated;

an update frequency storage section storing update information

for each of the regions;

an update frequency calculation section calculating a new update frequency for each of the regions based on a previous update frequency of the each region and newly acquired information on update of said each region; and

a determination section determining that the region having a highest update frequency as the key region.

10. The information processing apparatus according to claim 9, wherein the new update frequency of each of said regions is calculated using an exponential average between the previous update frequency of said each region and a value included in the newly acquired information on the update of said each region.

11. An information processing apparatus for determining a key region from a structured document, the apparatus comprising:

a read section acquiring said structured document regularly or irregularly;

a division section dividing the structured document acquired by the read section into one or a plurality of regions;

a storage section temporarily storing a read result of the read section;

a comparison section comparing a content of said structured document acquired by said read section at one reading time with the content of said structured document acquired at a different reading time for each of said regions, and thereby checking whether each of the regions has been updated;

an update information storage section storing update information for each of the regions;

an update frequency calculation section calculating a new update frequency for each of the regions based on a previous update frequency of the each region and newly acquired information on update

of said each region; and

a determination section determining that the region having a highest update frequency as the key region.

12. An information processing apparatus for determining a key region from a structured document, the apparatus comprising:

a read section acquiring said structured document regularly or irregularly;

a division section dividing the structured document acquired by the read section into one or a plurality of regions;

a conversion section converting a content of each of said divided regions into converted data;

a storage section temporarily storing the converted data;

a comparison section comparing the converted data obtained from said structured document that is acquired by said read section at one reading time with the converted data obtained from said structured document that is acquired at a different reading time, and thereby checking whether each of the regions has been updated;

an update information storage section storing update information for each of the regions;

an update frequency calculation section calculating a new update frequency for each of the regions based on a previous update frequency of the each region and newly acquired information on update of said each region; and

a determination section determining that the region having a highest update frequency as the key region.

13. An information processing apparatus for selecting a key region from a structured document including a plurality of regions, the apparatus comprising:

an attribute information generation section analyzing a control character designating a display structure of said structured document,

and generating attribute information on each of said regions; and

a key region select section selecting the key region from among the plurality of regions by comparing said attribute information of the regions.

14. The information processing apparatus according to claim 13, wherein

said attribute information generation section uses a displayed area or a displayed area proportion of each of the regions as said attribute information, and

said key region select section selects the region having a large displayed area or a high displayed area proportion as the key region.

15. The information processing apparatus according to claim 13, wherein

said attribute information generation section uses a displayed position of each of the regions as said attribute information, and

said key region select section selects the region of which is closest to a center of a display screen as the key region.

16. The information processing apparatus according to claim 13, wherein

said attribute information generation section uses a displayed area or a displayed area proportion and a displayed position of each of the regions as said attribute information, and

said key region select section selects one of the regions having a large displayed area or a high displayed area proportion, or the region the displayed position of which is closest to a center of a display screen as the key region.

17. The information processing apparatus according to claim 16, wherein

said key region select section selects the region having a high value given by $X\alpha + Y\beta$ as the key region, and wherein

X is a displayed area or a displayed area proportion of each of said regions;

Y is a distance between a center of said display screen and a center of each of the regions; and

α and β are weighting factors.

18. The information processing apparatus according to claim 16, wherein

said key region select section selects the region having a high value given by XY as the key region, and wherein

X is a displayed area or a displayed area proportion of each of said regions; and

Y is a distance between a center of said display screen and a center of each of the regions.

19. The information processing apparatus according to claim 13, wherein

said attribute information generation section uses a counting result of characters equal in type and size as said attribute information, and

said key region select section selects the region having a high counting value as the key region.

20. An information processing method for selecting a key region from a structured document including a plurality of regions, wherein

an attribute information generation section analyzing a control character designating a display structure of said structured document, and generating attribute information on each of said regions; and

a key region select section selecting the key region from among the plurality of regions by comparing said attribute information of the regions.